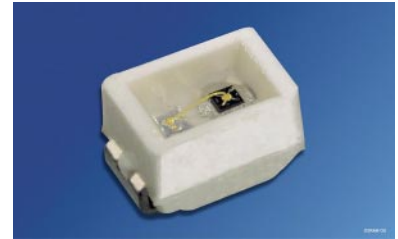


LS M670, LO M670, LY M670, LG M670, LP M670



Besondere Merkmale

- **Gehäusotyp:** weißes SMT-Gehäuse
- **Besonderheit des Bauteils:** kleine Bauform 2,3 mm x 1,3 mm x 1,4 mm
- **Wellenlänge:** 628 nm (super-rot), 605 nm (orange), 590 nm (gelb), 570 nm (grün), 560 nm (pure green)
- **Abstrahlwinkel:** Lambertscher Strahler (120°)
- **Technologie:** GaAlP (super-rot, orange, gelb, grün), GaP (pure green)
- **optischer Wirkungsgrad:** 1,5 lm/W (super-rot, orange, gelb), 2,5 lm/W (grün), 0,6 lm/W (pure green)
- **Gruppierungsparameter:** Lichtstärke
- **Verarbeitungsmethode:** für alle SMT-Bestücktechniken geeignet
- **Lötmethode:** IR Reflow Löten
- **Vorbehandlung:** nach JEDEC Level 2
- **Gurtung:** 8-mm Gurt mit 3000/Rolle, ø180 mm oder 12000/Rolle, ø330 mm

Anwendungen

- Optischer Indikator
- Hinterleuchtung (LCD, Handy, Schalter, Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Einkopplung in Lichtleiter
- Informationsanzeigen im Innenbereich
- Innenbeleuchtung im Automobilbereich (z.B. Instrumentenbeleuchtung, u.ä.)
- Markierungsbeleuchtung (z.B. Stufen, Fluchtwege, u.ä.)

Features

- **package:** white SMT package
- **feature of the device:** small package 2.3 mm x 1.3 mm x 1.4 mm
- **wavelength:** 628 nm (super-red), 605 nm (orange), 590 nm (yellow), 570 nm (green), 560 nm (pure green)
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** GaAlP (super-red, orange, yellow, green), GaP (pure green)
- **optical efficiency:** 1.5 lm/W (super-red, orange, yellow), 2.5 lm/W (green), 0.6 lm/W (pure green)
- **grouping parameter:** luminous intensity
- **assembly methods:** suitable for all SMT assembly methods
- **soldering methods:** IR reflow soldering
- **preconditioning:** acc. to JEDEC Level 2
- **taping:** 8-mm tape with 3000/reel, ø180 mm or 12000/reel, ø330 mm

Applications

- optical indicators
- backlighting (LCD, cellular phones, switches, keys, displays, illuminated advertising, general lighting)
- coupling into light guides
- indoor displays
- interior automotive lighting. (e.g. dashboard backlighting, etc.)
- marker lights (e.g. steps, exit ways, etc.)

LS M670, LO M670, LY M670, LG M670, LP M670

Typ	Emissions- farbe	Farbe der Lichtaustritts- fläche	Lichtstärke	Lichtstrom	Bestellnummer
Type	Color of Emission	Color of the Light Emitting Area	Luminous Intensity $I_F = 10 \text{ mA}$ $I_V \text{ (mcd)}$	Luminous Flux $I_F = 10 \text{ mA}$ $\Phi_V \text{ (lm)}$	Ordering Code
LS M670-H2J2-1 LS M670-J2L1-1 LS M670-H2 LS M670-J1 LS M670-J2 LS M670-K1 LS M670-K2 LS M670-L1	super-red	colorless clear	3.55 ... 7.10 5.60 ... 14.00 3.55 ... 4.50 4.50 ... 5.60 5.60 ... 7.10 7.10 ... 9.00 9.00 ... 11.20 11.20 ... 14.00	15 (typ.) 28 (typ.) 12 (typ.) 15 (typ.) 19 (typ.) 24 (typ.) 30 (typ.) 40 (typ.)	Q62703-Q5083 Q62703-Q5084
LO M670-H2J2-1 LO M670-J2L1-1 LO M670-H2 LO M670-J1 LO M670-J2 LO M670-K1 LO M670-K2 LO M670-L1	orange	colorless clear	3.55 ... 7.10 5.60 ... 14.00 3.55 ... 4.50 4.50 ... 5.60 5.60 ... 7.10 7.10 ... 9.00 9.00 ... 11.20 11.20 ... 14.00	15 (typ.) 28 (typ.) 12 (typ.) 15 (typ.) 19 (typ.) 24 (typ.) 30 (typ.) 40 (typ.)	Q62703-Q5038 Q62703-Q5039
LY M670-H2J2-1 LY M670-J2L1-1 LY M670-H2 LY M670-J1 LY M670-J2 LY M670-K1 LY M670-K2 LY M670-L1	yellow	colorless clear	3.55 ... 7.10 5.60 ... 14.00 3.55 ... 4.50 4.50 ... 5.60 5.60 ... 7.10 7.10 ... 9.00 9.00 ... 11.20 11.20 ... 14.00	15 (typ.) 28 (typ.) 12 (typ.) 15 (typ.) 19 (typ.) 24 (typ.) 30 (typ.) 40 (typ.)	Q62703-Q5121 Q62703-Q5122
LG M670-J2K2-1 LG M670-K2M1-1 LG M670-J2 LG M670-K1 LG M670-K2 LG M670-L1 LG M670-L2 LG M670-M1	green	colorless clear	5.6 ... 11.2 9.0 ... 22.4 5.6 ... 7.1 7.1 ... 9.0 9.0 ... 11.2 11.2 ... 14.0 14.0 ... 18.0 18.0 ... 22.4	25 (typ.) 45 (typ.) 19 (typ.) 24 (typ.) 30 (typ.) 40 (typ.) 50 (typ.) 60 (typ.)	Q62703-Q5006 Q62703-Q5007

LS M670, LO M670, LY M670, LG M670, LP M670

Typ	Emissions- farbe	Farbe der Lichtaustritts- fläche	Lichtstärke	Lichtstrom	Bestellnummer
Type	Color of Emission	Color of the Light Emitting Area	Luminous Intensity $I_F = 10 \text{ mA}$ $I_V \text{ (mcd)}$	Luminous Flux $I_F = 10 \text{ mA}$ $\Phi_V \text{ (lm)}$	Ordering Code
LP M670-F2G2-1	pure green	colorless clear	1.40 ... 2.80	6.0 (typ.)	Q62703-Q5060
LP M670-G2J1-1			2.24 ... 5.60	11.0 (typ.)	Q62703-Q5061
LP M670-F2			1.40 ... 1.80	4.8 (typ.)	
LP M670-G1			1.80 ... 2.24	6.0 (typ.)	
LP M670-G2			2.24 ... 2.80	7.6 (typ.)	
LP M670-H1			2.80 ... 3.55	9.5 (typ.)	
LP M670-H2			3.55 ... 4.50	12.0 (typ.)	
LP M670-J1			4.50 ... 5.60	15.0 (typ.)	

Helligkeitswerte werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von $\pm 11 \%$ ermittelt.

Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of $\pm 11 \%$.

Grenzwerte
Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Wert Value		Einheit Unit
		LS, LO, LY, LG	LP	
Betriebstemperatur Operating temperature range	T_{op}	– 40 ... + 100		°C
Lagertemperatur Storage temperature range	T_{stg}	– 40 ... + 100		°C
Sperrschichttemperatur Junction temperature	T_j	+ 100		°C
Durchlaßstrom Forward current	I_F	30		mA
Stoßstrom Surge current $t \leq 10 \mu s, D = 0.005$	I_{FM}	0.5		A
Sperrspannung Reverse voltage	V_R	5		V
Leistungsaufnahme Power dissipation	P_{tot}	95	90	mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient Sperrschicht/Lötpad Junction/soldering point Montage auf PC-Board FR 4 (Padgröße $\geq 16 \text{ mm}^2$) mounted on PC board FR 4 (pad size $\geq 16 \text{ mm}^2$)	$R_{th JA}$ $R_{th JS}$	480 230		K/W K/W

Kennwerte ($T_A = 25\text{ °C}$)

Characteristics

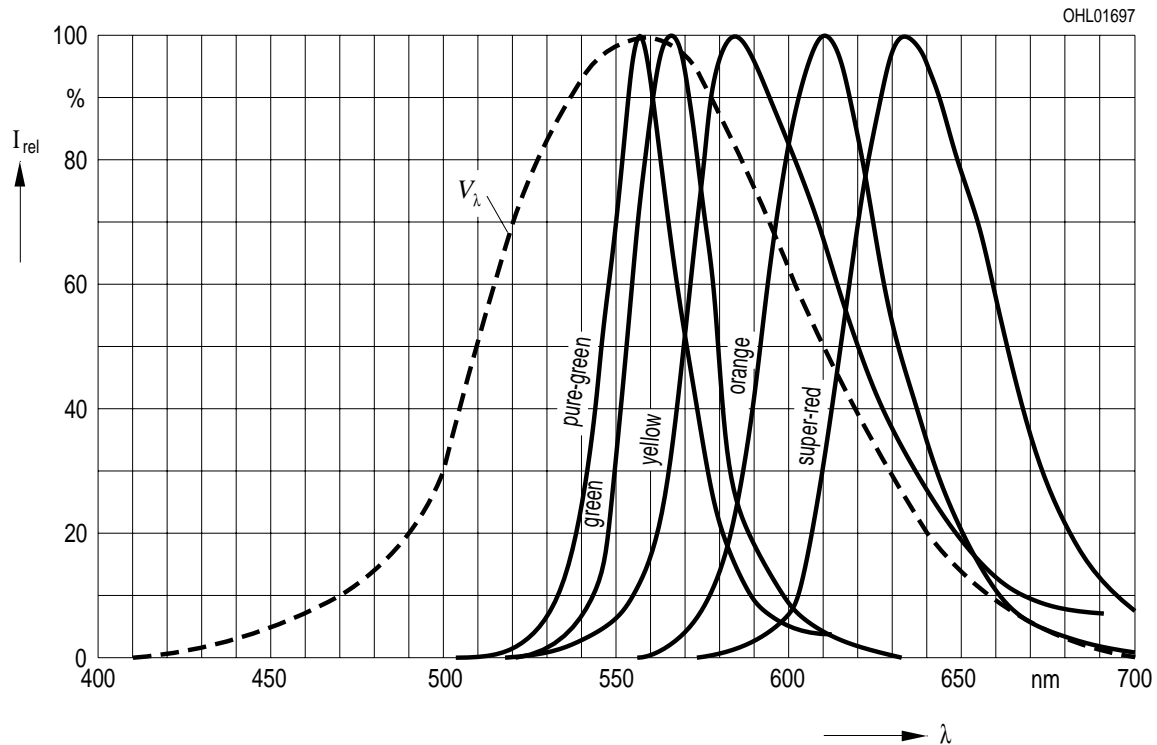
Bezeichnung Parameter	Symbol Symbol	Wert Value					Einheit Unit
		LS	LO	LY	LG	LP	
Wellenlänge des emittierten Lichtes (typ.) Wavelength at peak emission $I_F = 10\text{ mA}$	λ_{peak}	635	610	586	565	557	nm
Dominantwellenlänge (typ.) Dominant wavelength $I_F = 10\text{ mA}$	λ_{dom}	628	605	590	570	560	nm
Spektrale Bandbreite bei 50 % $I_{\text{rel max}}$ (typ.) Spectral bandwidth at 50 % $I_{\text{rel max}}$ $I_F = 10\text{ mA}$	$\Delta\lambda$	45	40	45	25	22	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) (typ.) Viewing angle at 50 % I_V	2ϕ	120	120	120	120	120	Grad deg.
Durchlaßspannung (typ.) Forward voltage (max.) $I_F = 10\text{ mA}$	V_F V_F	2.0 2.6	2.0 2.6	2.0 2.6	2.0 2.6	2.0 2.6	V V
Sperrstrom (typ.) Reverse current (max.) $V_R = 5\text{ V}$	I_R I_R	0.01 10	0.01 10	0.01 10	0.01 10	0.01 10	μA μA
Temperaturkoeffizient von λ_{peak} (typ.) Temperature coefficient of λ_{peak} $I_F = 10\text{ mA}$	$TC_{\lambda_{\text{peak}}}$	0.11	0.12	0.10	0.11	0.11	nm/K
Temperaturkoeffizient von λ_{dom} (typ.) Temperature coefficient of λ_{dom} $I_F = 10\text{ mA}$	$TC_{\lambda_{\text{dom}}}$	0.07	0.07	0.07	0.07	0.05	nm/K
Temperaturkoeffizient von V_F (typ.) Temperature coefficient of V_F $I_F = 10\text{ mA}$	TC_V	-1.9	-1.9	-1.9	-1.4	-2.1	mV/K
Optischer Wirkungsgrad (typ.) Optical efficiency $I_F = 10\text{ mA}$	η_{opt}	1.5	1.5	1.5	2.5	0.6	lm/W

Relative spektrale Emission $I_{\text{rel}} = f(\lambda)$, $T_A = 25^\circ\text{C}$, $I_F = 10\text{ mA}$

Relative Spectral Emission

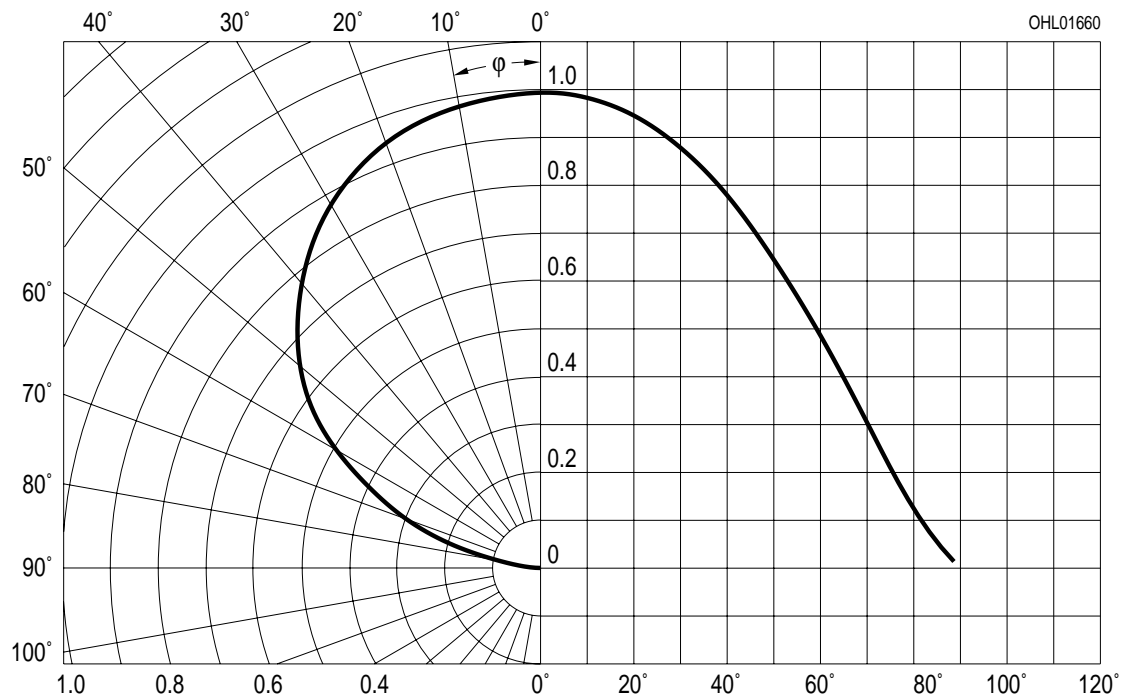
$V(\lambda)$ = spektrale Augenempfindlichkeit

Standard eye response curve



Abstrahlcharakteristik $I_{\text{rel}} = f(\varphi)$

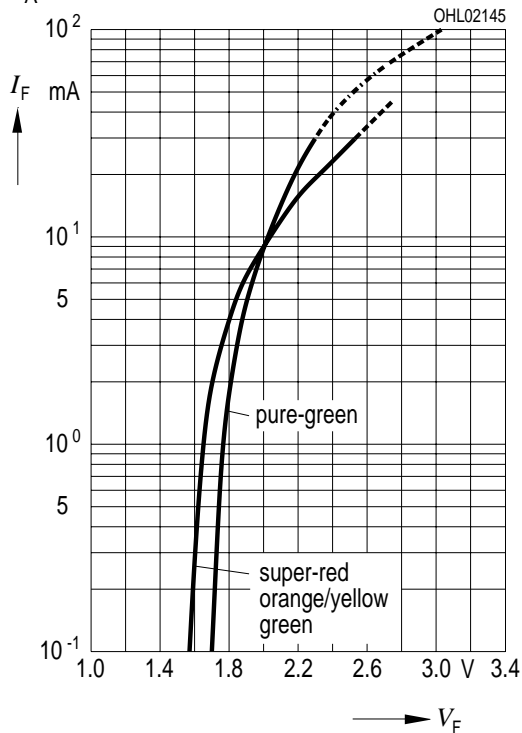
Radiation Characteristic



Durchlaßstrom $I_F = f(V_F)$

Forward Current

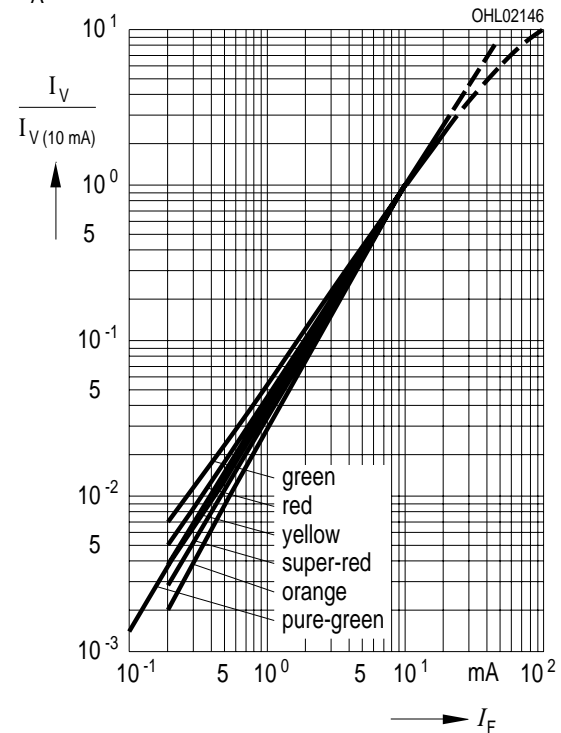
$T_A = 25^\circ\text{C}$



Relative Lichtstärke $I_V/I_{V(10\text{ mA})} = f(I_F)$

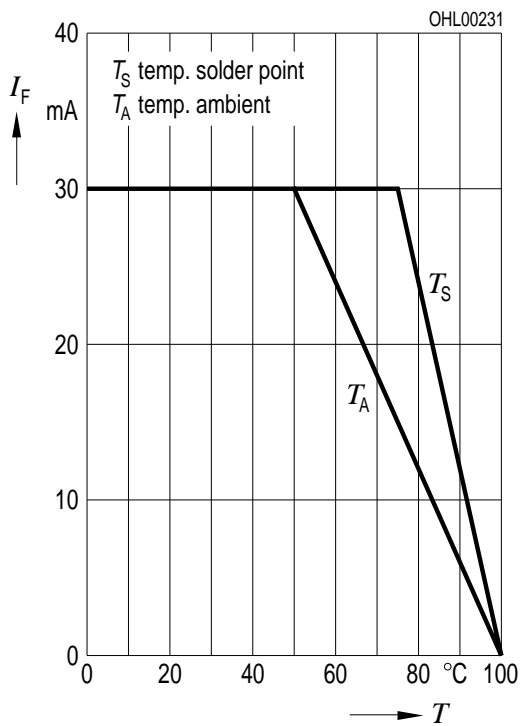
Relative Luminous Intensity

$T_A = 25^\circ\text{C}$



Maximal zulässiger Durchlaßstrom $I_F = f(T_A)$

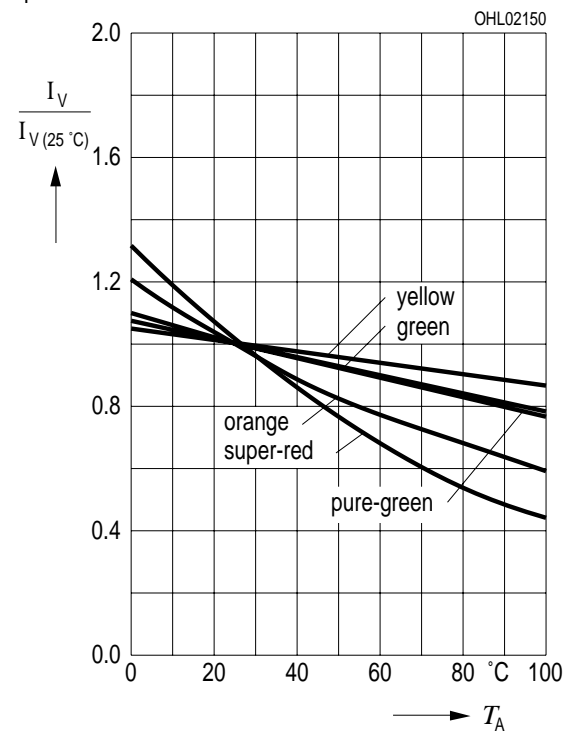
Max. Permissible Forward Current



Relative Lichtstärke $I_V/I_{V(25^\circ\text{C})} = f(T_A)$

Relative Luminous Intensity

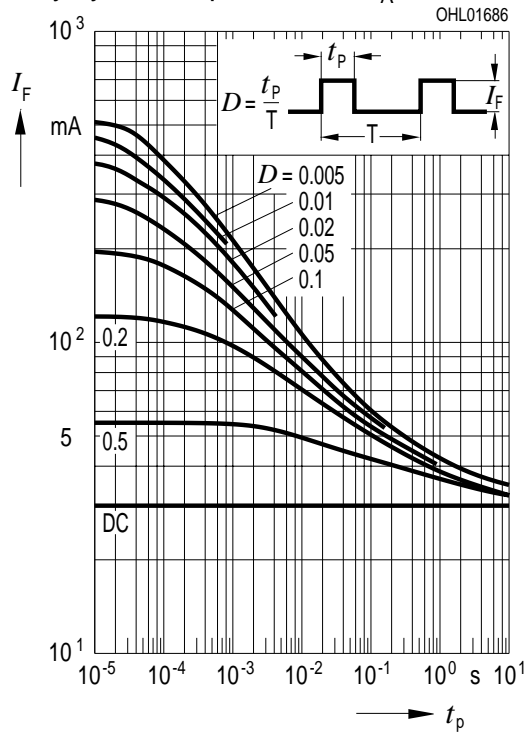
$I_F = 10\text{ mA}$



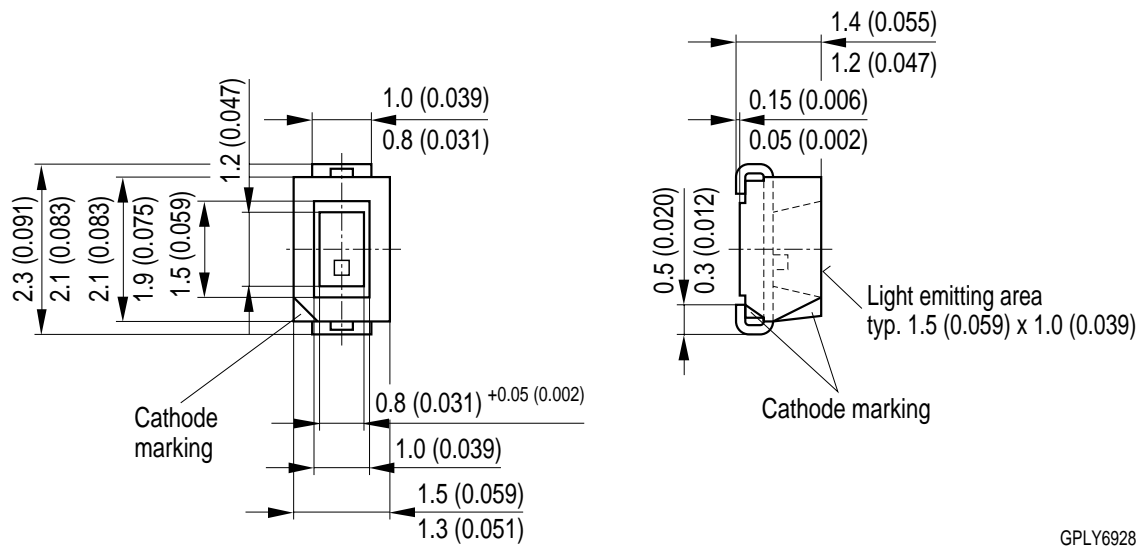
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$

Permissible Pulse Handling Capability

Duty cycle $D =$ parameter, $T_A = 25\text{ °C}$



Maßzeichnung
Package Outlines

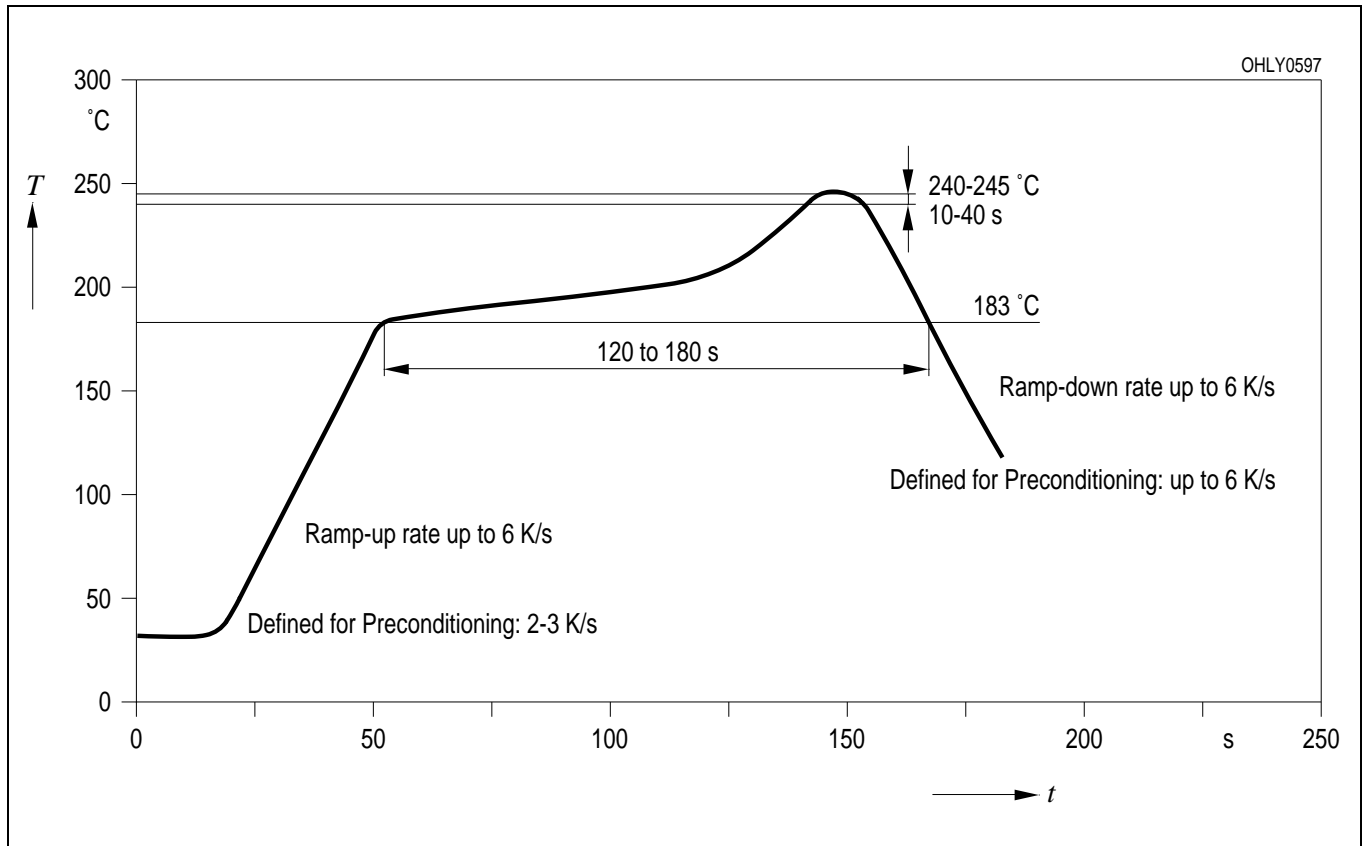


GPLY6928

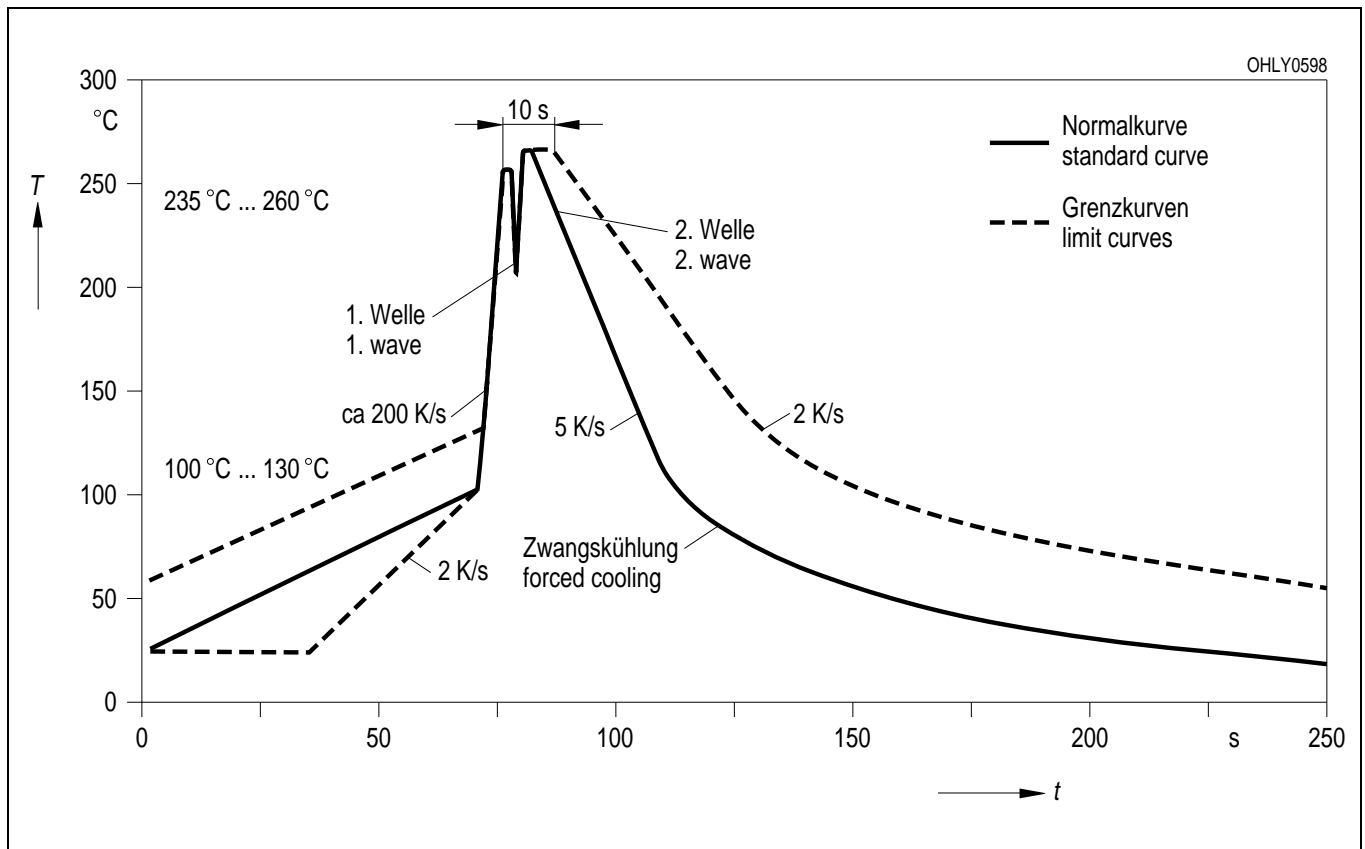
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Lötbedingungen Vorbehandlung nach JEDEC Level 2
Soldering Conditions Preconditioning acc. to JEDEC Level 2

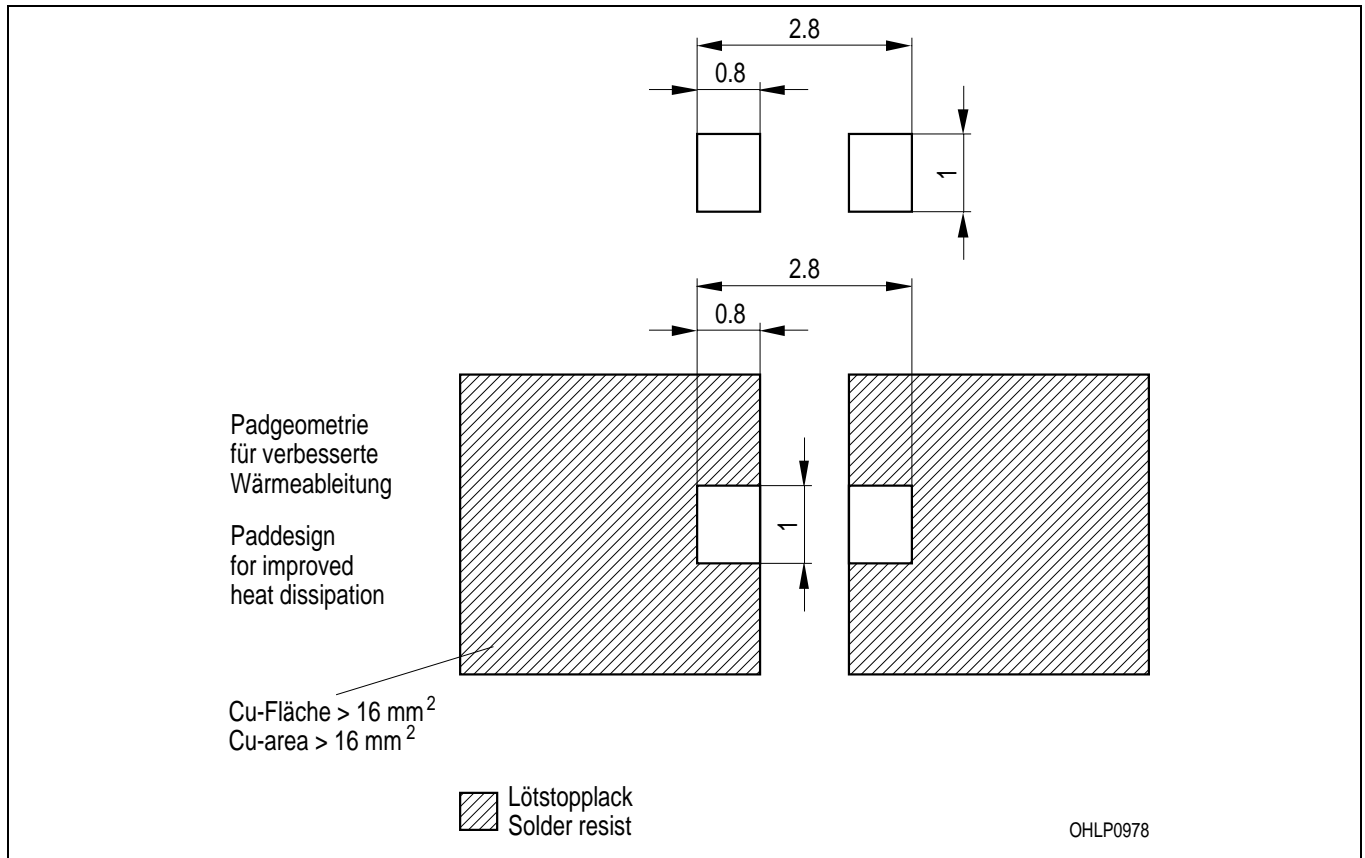
IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)



Wellenlöten (TTW) (nach CECC 00802)
TTW Soldering (acc. to CECC 00802)



Empfohlenes Lötpaddesign IR Reflow Löten
Recommended Solder Pad IR Reflow Soldering



Gurtung / Polarität und Lage

Verpackungseinheit 3000/Rolle, ø180 mm oder
 12000/Rolle, ø330 mm

Method of Taping / Polarity and Orientation Packing unit 3000/reel, ø180 mm or 12000/reel, ø330 mm

